interaction, reverse phase, metal chelate and covalent chromatography. All these areas are well-covered and in considerable detail, but much of this can be found in other texts in similar detail. Where this book differs from many other volumes is in the detailed coverage it provides for a range of important basic procedures which tend to either get overlooked or receive scant coverage in other texts, but which are nevertheless equally important to the successful outcome of a protein purification protocol. The first three chapters (accounting for just over half the book) thus cover, in considerable practical detail, basic aspects such as planning a purification strategy, methods for the disruption of tissue, the prevention of unwanted proteolysis, clarification of extracts, the measurement of protein concentration, assay methods, methods for concentrating solutions, methods for removing salts/changing buffers, organelle isolation, and the methods available for initial crude separations prior to chromatographic purification. The book is intended to be used as a bench manual and certainly contains ample practical detail for this purpose.

A comprehensive appendix of names and addresses of suppliers is a useful addition. Far less useful is the second appendix, with the title 'useful recipes' which describes the preparation of half a dozen standard buffers or solutions. This could have been far more comprehensive. By contrast, the index is comprehensive.

This book was designed to cover basic methods and a companion volume on applications of these methods is soon to be published. While this book is successfully aimed at the laboratory worker, I would also encourage undergraduates to read this book, since many undergraduate texts have been slow to include many of the more recent developments in protein chemistry that are described in this book.

John M. Walker

Iron Carriers and Iron Proteins (Physical Bioinorganic Chemistry Series, vol. 5); Edited by T.M. Loehr; VCH Verlag; Weinheim, Basel, Cambridge, New York, 1989; xvii + 533 pages; DM 298.00

In the past decade, there has been an enormous growth of interest and knowledge in the field of 'inorganic biochemistry', or 'bioinorganic chemistry' as it is sometimes called. This book aims to assess what can be learned about iron and its metabolism by applying modern chemical techniques. There are six chapters in all, most by acknowledged experts in the field.

In an excellent Chapter 1, Matzanke et al. discuss siderophore-mediated iron transport. They cover the structural features of siderophores (including absolute configurations, and molecular shape in solution, where information is available), studies upon them by ESR and Mössbauer spectroscopy, siderophore electrochemistry, mechanisms by which cells take up siderophores and cause intracellular iron release from them, and a brief (and incomplete) account of the use of siderophores in medicine. In an equally good Chapter 2, Harrison and Lilley summarize our current knowledge of the ferritins. Particular attention is paid to the structure of the core, to Mössbauer studies and to the 3D structure of the proteins. This leads on to Chapter 3, in which Harris and Aisen present a first-rate account of the transferrins. My only criticism is that the discussion of transferrin-mediated hydroxyl radical production on page 244 is about four years out of date (as are several other parts of the Chapter). In Chapter 4, the authors update the transferrin literature to 1988, but still do not address the hydroxyl radical question. It is surprising that this update was added as a separate chapter rather than being incorporated into Chapter 3. Apparently Chapter 3 was submitted in 1984, so the book has had a long gestation period.

In Chapter 5, Sanders-Loehr discusses binuclear iron proteins, in which iron ions are bridged by sulphur or oxygen atoms. Particular attention is paid to haemerythrin, ribonucleoside diphosphate reductase (although some aspects of the mechanism presented are a bit out of date), purple acid phosphatases, and methane monooxygenase. Finally, Que discusses the catechol dioxygenases, both intradiol and extradiol types. The book ends with an adequate (although slightly skimpy) index.

Overall, I enjoyed this book. It is not comprehensive, but I recommend it as a useful and well-written compendium of information about the iron proteins discussed.

B. Halliwell

Alpha$_1$-Acid Glycoprotein; Edited by P. Baumann, C.B. Eap, W.E. Müller and J.-P. Tillement; Alan R. Liss; New York, 1989; xxvi + 470 pages; $94.00

α_1-Acid glycoprotein (AAG) was the first of the many glycoproteins to be isolated and characterised slightly less than forty years ago. The original reports, and many since, on this compound came from the laboratory of Karl Schmid. This book records the Proceedings of the Symposium held in 1988 to mark Schmid's retirement one year earlier. Over fifty papers, many from former coworkers, provide a fitting tribute to his enormous contribution to the field. They also